The Voyager Multimedia Server 2.0

Retreat 2003

Overview

- Introduction
- Requirements Review
- Architectural Overview
- Design Details
- Developer Entry Points

Introduction

- Voyager is a storage system
- Voyager can archive and playback RTP encapsulated data.
- Voyager has been used to archive:
  - multicast audio and video
  - tracking streams from virtual reality devices
- Voyager has the potential to archive many types of data

Requirements Review

- Voyager stores Metadata
- Voyager manages Archives
- Voyager exposes Network Interfaces
- Voyager is Secure

Voyager Metadata Storage

The Metadata that Voyager uses to do session recording, archiving and playback needs to be reliably stored over long periods of time. The basic metadata we care about is:

1. **User** – to represent a user.
2. **Time** – An object to provide an interface to various time standards and translate between them.
3. **Session** – The core class in Voyager, Voyager creates, manages recording/playback of, and archives/retrieves sessions.
4. **Media** – A single digital media component of a Session. A web cast for example might have a video and audio media configuration objects in the Session.
5. **Event** – A single event component of a Session. A web cast might also include a slide event configuration.
6. **Block Data** – A single block data component of a Session. A web cast might include a block data configuration for the PowerPoint slides that need to be distributed at the beginning of the meeting.

Voyager Archive Management

Archives are the stored representation of a session.

Voyager Sessions can be in one of three states (which corresponds to time)

1. Archived, Recorded
2. Being Recorded, and thus Archived
3. To Be Recorded, and then Archived

Consequently, only sessions that are recorded (and possibly being recorded) can be played back.

Metadata can be stored with the Archive.

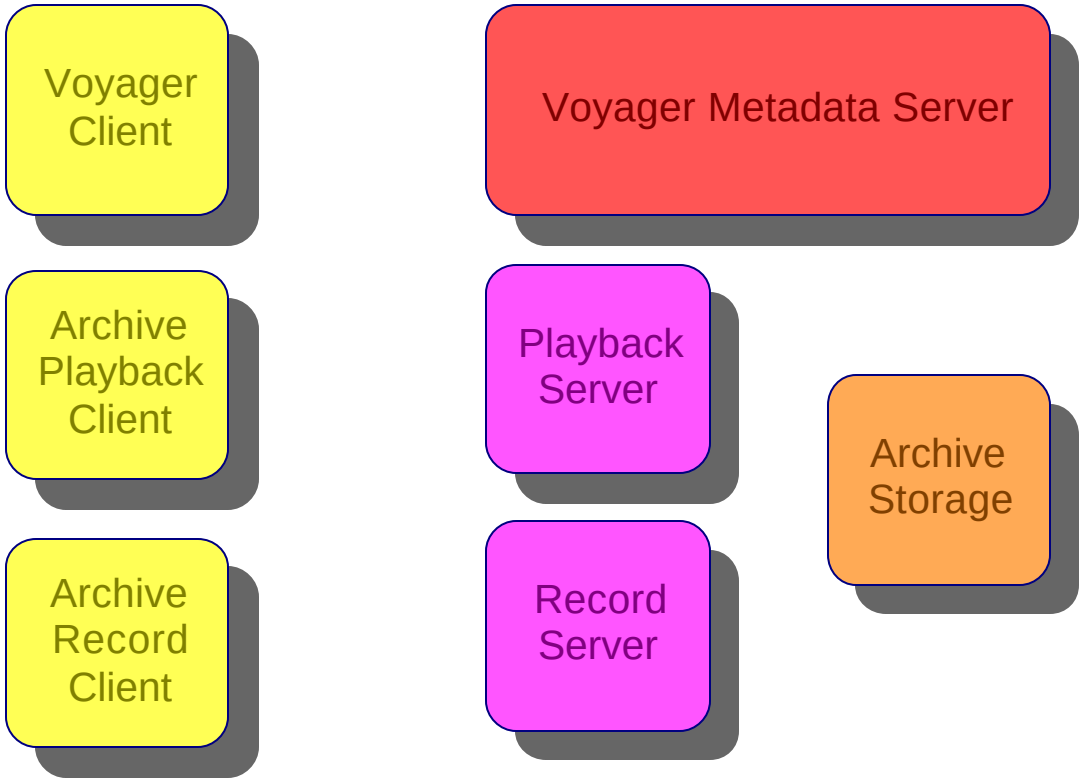
Voyager Network Interfaces

- Voyager exposes multiple Client Interfaces
  - CORBA – which has been used in the past
  - XML-RPC – which is what the current CVS of Voyager 1.0 uses
  - SOAP – what we'll use in Voyager 2

Voyager Security

- Voyager needs to be operated without cumbersome security infrastructure
- Voyager needs to provide reasonable security
- Voyager should be able to leverage security in AG2

Architectural Overview



Voyager Client

- The Voyager Client provides the user with the ability to:
  - Browse Archives
  - Schedule recording
  - Play a Archive
  - Import an Archive
  - Export an Archive

Playback Client

- The Playback Client coordinates the playback of an archive
- Playback could occur into an existing session
- Advanced playback functionality includes:
  - Fast Forward
  - Rewind
  - Seek

Record Client

- The Record Client coordinates the recording of a session.
- It involves:
  - Naming the Archive
  - Specifying the location of the various data and event streams
  - Specifying the location of the block data

Voyager Metadata Server

- The Voyager Metadata Server (VMS) provides the management of metadata.
- Through the VMS, Voyager Clients can setup the recording of sessions by:
  - Checking for available storage space
  - Checking for permission
  - Reserving Space
  - Scheduling the Recording

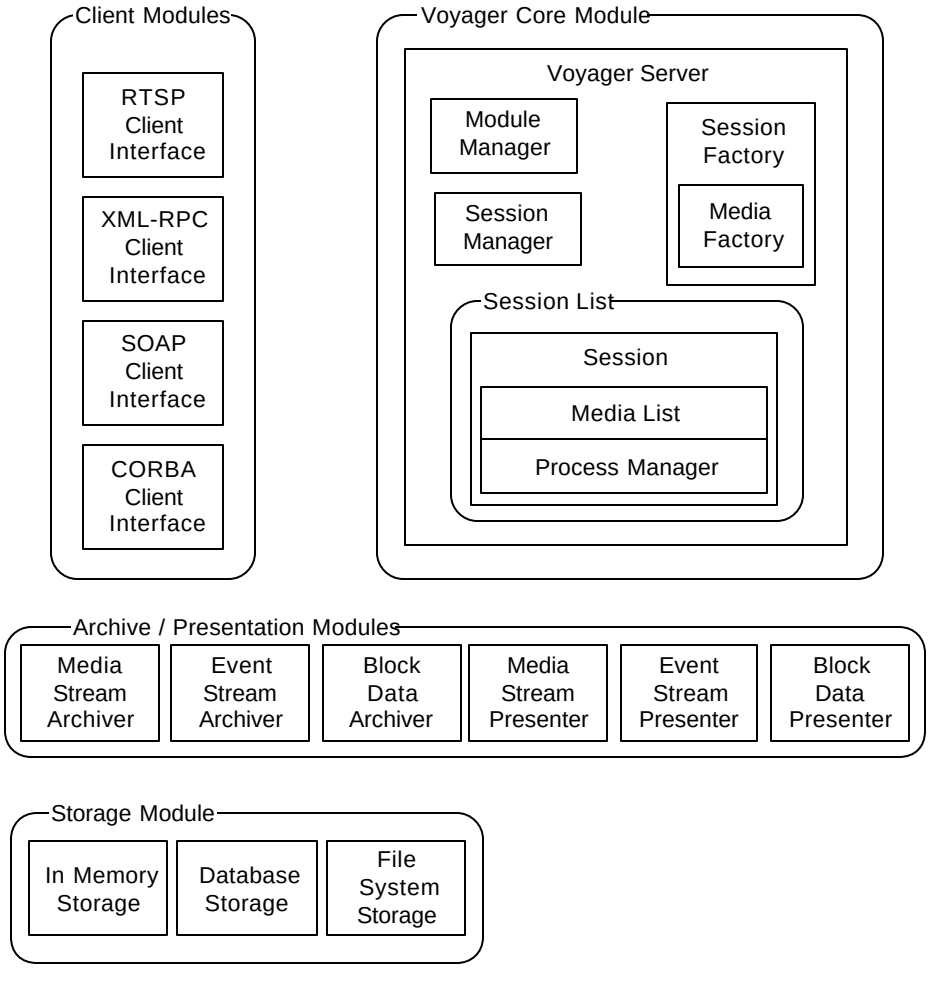
Playback / Record Server

- The Playback Server provides interactive playback control to clients viewing archives.
- The Record Server provides interactive recording control to clients recording sessions.

Archive Storage

- The Archive Storage should provide mechanisms to:
  - Check Available Space
  - Authorize Storage

Design Details



Design Overview

- The Design is decomposed into four modules:
  - Metadata
  - Client Interfaces
  - Archive/Presentation
  - Storage

Core Module

- The core modules defines classes and methods for managing metadata.
- In addition to the basic data classes, there are classes for:
  - The Voyager Server
  - Session Lists
  - Session Managers
  - Process Managers

Client Modules

- Client Modules provide interfaces for Venue Metadata operations, recording and playback.
- Planned Modules include:
  - RTSP
  - SOAP
  - XML-RPC
  - CORBA

Archive/Presentation Modules

- Archive / Presentation Modules transfer Sessions to Archives and Archives to Sessions.
- Planned modules include:
  - streaming media
  - event data
  - block data transfer.

Storage Modules

- Storage Modules keep data safe over long periods of time.
- Planned Storage Modules include:
  - File System
  - Data Base

Developer Entry Points

- Client Modules
- Archive/Presentation Modules
- Storage Modules
- Clients

Developer Overview

Steps to enable developers

1. Define Metadata classes
2. Define Module Interfaces

Implement:

1. Voyager Client
2. File System Storage
3. RTP/RTCP Record/Playback
4. RTSP Client Module

Client Plans

- Need to develop a Voyager Client for dealing with Metadata and Scheduling.
- Initially we can leverage Real Player and JMF Clients.
- We'll need to develop a custom client, since no commercial clients support multistream playback.

Time Line?

- Early Summer for Voyager 2 Beta
- Late Summer for Voyager 2 RC1
- Early Fall for Voyager 2 Final

Questions?

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